

NATURAL RESOURCES BOARD AGENDA ITEM

3.B.2.

Item No. _____

SUBJECT: Board Order WA-15-06: Revisions to NR 500 Series related to requirements for landfill organic stability plans.

FOR: JUNE, 2006 **BOARD MEETING**

TO BE PRESENTED BY: Brad Wolbert - WA/3

SUMMARY:

The Board approved a requirement for landfill operators to submit landfill organic stability plans at its March, 2005 meeting, and directed DNR staff to draft more detailed rules for the landfill organic stability plans for the February, 2006 Board meeting. At that meeting, the Board authorized the Department to hold public hearings on the proposed rules.

Landfill organic stability plans will reduce the environmental and public health risks posed by the long-term persistence of undecomposed organic materials in landfills. These rule revisions contain requirements for the minimum contents of the plans; a set of goals for the landfill operator to use to model the chosen strategy for achieving organic stability; monitoring, evaluation, and reporting requirements; and definitions specifying to which landfills these rules apply. The proposed rules attempt to establish achievable goals and an even playing field for landfill operators while remaining non-prescriptive about the methods the operators use to achieve the goals. The proposed rules were developed over an 18-month period with the collaboration of outside stakeholders.

Comments at the public hearings reflected two divergent viewpoints: some support the proposed rules but feel the Department should move more aggressively to simply ban the landfilling of organic materials; others believe the proposed rules are too aggressive relative to the scope of the problem, and that the goals in the rule may not be achievable.

This rule revision package also takes the opportunity to correct non-substantive rule drafting and style errors inadvertently left in the previous NR 500 rule package passed by the Board, and makes one substantive but minor change in the testing requirements for newly installed landfill liners. There were no comments on these minor proposed changes.

RECOMMENDATION: That (1) the Board adopt the proposed revisions to the NR 500 Series, and (2) the Board adopt the accompanying resolution directing the Department to conduct a 5-year review of the rule.

LIST OF ATTACHED MATERIALS:

No	<input type="checkbox"/>	Fiscal Estimate Required	Yes	<input checked="" type="checkbox"/>	Attached
No	<input type="checkbox"/>	Environmental Assessment or Impact Statement Required	Yes	<input checked="" type="checkbox"/>	Attached
No	<input type="checkbox"/>	Background Memo	Yes	<input checked="" type="checkbox"/>	Attached

APPROVED:

Bureau Director, Sue Bangert

05/22/2006
Date

Administrator, Al Shea

05/22/2006
Date

Secretary, Scott Hassett

05/22/2006
Date

cc: Amy J. Lemberger - AD/5
Carol Turner/ Dan Graff LS/5

DATE: May 22, 2005

TO: Gerald M. O'Brien, Chair
Howard D. Poulson, Vice-Chair
Stephen D. Willett (Air, Waste and Water Management/Enforcement Committee)

FROM: Scott Hassett

SUBJECT: Adoption of Proposed Revisions to the NR 500 Series of Solid Waste Rules, Board Order #WA-15-06

1. Why the Rule Revisions are Being Proposed

These proposed rules are a follow-up to a rule provision approved by the Board in March, 2005 which will require operators of new and expanded landfills to submit a plan for significantly reducing the amount of degradable organic material remaining after landfill closure in order to materially reduce the amount of time needed to reach landfill organic stability. By accelerating the decomposition of organic waste in a landfill or diverting organic waste away from landfills, operators can significantly reduce the environmental and public health risks of landfills to future generations. These proposed rules contain more specific detail on the minimum content of the required plans and the criteria by which they will be evaluated, as directed by the Board at its March, 2005 meeting.

2. Summary of the Proposed Rule Revisions

The proposed rules lay out the minimum requirements for the contents of a landfill organic stability plan, including an evaluation of waste composition, measures to be implemented by the landfill operator, the anticipated outcome of those measures, site monitoring and intermediate milestones, and a contingency plan to be implemented if the primary plan is not effective. The rule also contains a set of goals which provide all affected landfill operators with a common design objective and a basis for measuring success. The goals use landfill gas production as a general indicator of organic stability for modeling purposes rather than as a specific performance measure or numerical environmental standard which would indicate, for instance, when a landfill operator could turn off a leachate collection or gas extraction system. Performance measures for that purpose would need to be developed based on the risk an individual landfill posed to human health and the environment and are beyond the scope of these rules. Finally, the rules require that the landfill operator monitor the progress of the landfill and report to DNR annually. Every 5 years the landfill operator must evaluate the progress of decomposition against the plan milestones and determine if the contingency plan needs to be implemented.

In addition to the proposed rule language, we are recommending that within 5 years of the effective date of these rules the Department convene a panel of independent experts in the field of landfill design and operations. The purpose of this panel would be to review on a statewide basis the landfill gas and leachate monitoring data collected that are related to landfill stability efforts, and evaluate the effectiveness of the various efforts implemented to promote more rapid achievement of landfill organic stability. The panel would advise the Department on ways to improve the efficiency and effectiveness of the rule based on the knowledge gained in the first 5 years of the rule's implementation. The Department would not exercise its authority under the rules to require any landfill operator to invoke its contingency plan until the independent panel completed its work and made its recommendations. A proposed Board

resolution directing the Department to convene this panel and report to the Board on its recommendations is included with this package as an attachment.

This rule would apply only to new and expanded municipal waste landfills that received a plan of operation approval after January 1, 2004 and most older landfills that continue to operate after January 1, 2012. There are 8 landfills that were approved in 2004 and 2005 (out of a total of 35 municipal solid waste landfills currently in operation statewide), and we anticipate an average of 3 additional landfills per year would become subject to these rules as expansions or new facilities are approved.

These proposed landfill organic stability rule provisions are the result of 1½ years of cooperative efforts involving Department staff and a technical advisory workgroup. This workgroup included representatives of the 2 largest waste management firms doing business in the state, a municipality that owns and operates a landfill, 2 private waste management consultants, a prominent University of Wisconsin researcher in waste disposal, and a representative of the University's Cooperative Extension – Solid & Hazardous Waste Education Center. We solicited internal and external comments on a preliminary draft of the rule, and incorporated many of the suggestions we have heard prior to seeking permission from the Board for public hearing authorization.

In addition to the landfill organic stability provisions, this rule package contains several language and format changes to the previously approved leachate collection line rules. With one exception, these revisions are strictly format and style corrections that were inadvertently left out of the previous rule package, and are not substantive. The exception is a change in the testing requirements for destructive testing of liner membrane seams. The change reduces the minimum number of tests required in recognition of other testing requirements approved in the previous rule, and reflects the agreement of the stakeholder group involved in developing the collection line rules last year. The change is not controversial.

3. How This Proposal Affects Existing Policy

These rule revisions will have a significant impact on existing solid waste management policy. Current landfill design and operation standards have evolved over the last 30 years to prevent the introduction of liquids which could lead to groundwater contamination. This policy of containment or so-called “dry tomb” design has been very successful at preventing groundwater contamination during operation and for the near term after closure. However, it results in large amounts of undegraded organics remaining in the landfill. This is not a problem as long as the containment is maintained. But all engineering systems eventually fail, resulting in the long term in either costly remediation or environmental pollution. These rules require landfill operators to implement a plan to significantly reduce the amount of undegraded organics in landfills after closure, and allow operators a wide range of diversion, pre-processing and in-situ options to reach this goal (the Department's technical advisory workgroup identified some 20 different stabilization strategies landfill operators could draw upon to meet the proposed planning requirement; see <http://dnr.wi.gov/org/aw/wm/solid/landfill/stability/stabilizationstrategiesfinal03.pdf> for details of these strategies). By making this significant change in policy, the long term environmental risk and financial liability of landfills can be significantly reduced and we will not be passing on the cost of disposal to future generations.

4. Public Comment Synopsis

The Department conducted 2 public hearings on these proposed rule revisions, the first on April 11 in Eau Claire, and the second on April 12 in Waukesha. A total of 5 persons made appearances to provide

comments at the hearings. In addition, the Department received 2 sets of written comments after the hearings.

Hearing commenters emphasized their preference for management of organic materials outside of landfills. They felt the rule leaves landfill owners with too much discretion to continue landfilling organic materials instead of diverting them for composting. They also expressed a concern that continued landfilling of organic materials and growth in the use of leachate recirculation to speed decomposition of organics in landfills might prompt landfill operators to attempt to overturn Wisconsin's ban on landfilling of yard waste, which helps support a thriving commercial composting industry.

During the comment period, the Department received written comments from 2 large landfill companies doing business in Wisconsin, including one company that participated in the technical advisory committee for the development of the proposed rule. These comments were generally opposed to adoption of the rule, due to concerns that the technology for accelerating decomposition in landfills is unproven and may not be capable of achieving the landfill stability goals provided in the rule.

The Department consulted with its technical advisory committee in developing responses to public comments. Ultimately, the consensus of the committee was that the Department should proceed with the proposed rule, subject to minor changes to the rule language involving the contingency plans and the applicability of the rule; the Department made the recommended changes.

5. Response to Legislative Council Rules Clearinghouse Comments

The Department has considered all comments from the Legislative Council Rules Clearinghouse, and has modified the rule accordingly. A copy of the comments and the Department's responses is included at the end of the attached Summary of Public Comments.

6. Information on Environmental Analysis

The Department's environmental analysis on these proposed rule revisions is attached. The analysis determined that the primary environmental impact from the proposed rule revisions would be a long-term benefit due to the reduction in environmental risk from landfills containing undecomposed organic material with the potential for generation and release of air, surface water, and groundwater pollutants. The analysis also identified a number of potential short-term impacts, both positive and negative. Positive short-term impacts would include increased energy production if organics are managed within the landfill and methane is captured for energy conversion. Diversion of organics from landfills, to the extent that might result from the proposed rule, would represent a higher-value use of these material resources and would reduce the amount of land needed for landfill development. Negative short-term impacts would include higher operating costs for landfills, potentially higher methane emissions if landfill gas production increases and is not controlled, and potential negative impacts from facilities managing diverted organic materials. The analysis concluded that the rules would be precedent setting, but that risks would be limited because the rule language allows landfill operators to modify their organics stability plans based on experience, without penalty.

7. Final Regulatory Flexibility Analysis

See attached. Note that none of the landfills which are directly affected by this rule meet the definition of a small business. There are no compliance and/or reporting requirements for small businesses. However, there may be indirect cost increases to small businesses depending on the choices a landfill operator

makes to comply with the rule. Over time, these cost increases would be balanced out by the avoided long-term costs to society of managing long-closed waste disposal sites that still represent a risk to public health and the environment due to their content of undecomposed organics.

RESOLUTION

WHEREAS the Natural Resources Board recognizes that the science and technology governing the achievement of organic stability in landfills encompasses a wide range of methods, including innovations that are not routinely practiced in waste management system design and operations in Wisconsin; and

WHEREAS the Board believes that the current state of the science provides sufficient justification for promulgating a rule that promotes full-scale application of methods to speed the attainment of organic stability in landfills; and

WHEREAS the Board considers it important that knowledge gained from the application of methods for achieving landfill organic stability be defined and disseminated so that the rules requiring landfill organic stability plans may be improved over time;

NOW, THEREFORE, BE IT RESOLVED by the Natural Resources Board that the Department is directed to convene, within 5 years of the effective date of these rules, a panel of independent experts in the field of landfill design and operations to conduct a statewide review of the effectiveness of this rule in promoting more rapid achievement of landfill organic stability, and, based on the results of this review, to report back to the Board within 1 year of the panel being convened with recommendations on ways to improve the efficiency and effectiveness of the rule based on knowledge gained during the first 5 years of the rule's implementation.

NATURAL RESOURCES BOARD

Gerald M. O'Brien
Chairman

Fiscal Estimate — 2003 Session

<input type="checkbox"/> Original	<input checked="" type="checkbox"/> Updated	LRB Number	Amendment Number if Applicable
<input type="checkbox"/> Corrected	<input type="checkbox"/> Supplemental	Bill Number	Administrative Rule Number NR 500 Series

Subject

Revisions to NR 514.07 and NR 520.10, Wis. Adm. Code, pertaining to organic stability plans for landfills; to NR 516.07(2)(c)(2) pertaining to landfill liner construction, and drafting format and style corrections to NR 504, 506, 512, 514, and 516, Wis. Adm. Code, pertaining to landfilling of solid waste.

Fiscal Effect

State: ☐ No State Fiscal Effect

Check columns below only if bill makes a direct appropriation or affects a sum sufficient appropriation.

- | | |
|--|--|
| <input type="checkbox"/> Increase Existing Appropriation | <input checked="" type="checkbox"/> Increase Existing Revenues |
| <input type="checkbox"/> Decrease Existing Appropriation | <input type="checkbox"/> Decrease Existing Revenues |
| <input type="checkbox"/> Create New Appropriation | |

☒ Increase Costs — May be possible to absorb within agency's budget.

☒ Yes ☐ No

☐ Decrease Costs

Local: ☐ No Local Government Costs

1. ☒ Increase Costs
☐ Permissive ☐ Mandatory
2. ☐ Decrease Costs
☐ Permissive ☐ Mandatory

3. ☐ Increase Revenues
☐ Permissive ☐ Mandatory
4. ☐ Decrease Revenues
☐ Permissive ☐ Mandatory

5. Types of Local Governmental Units Affected:

☐ Towns ☐ Villages ☒ Cities

☒ Counties ☐ Others

☐ School Districts ☐ WTCS Districts

Fund Sources Affected

☐ GPR ☐ FED ☒ PRO ☐ PRS ☐ SEG ☐ SEG-S

Affected Chapter 20 Appropriations

20.370 2(dg)

Assumptions Used in Arriving at Fiscal Estimate

SUMMARY:

The existing rule, NR 514.07(9), requires new or expanded municipal solid waste (MSW) landfills with plan of operation approvals after January 1, 2004 to submit a landfill organic stability plan to the Department, either as part of their plan of operation or as a plan modification. The proposed rule would require stability plans from the subset of MSW landfills that were approved prior to January 1, 2004 that would continue to operate after January 1, 2012 if they are not more than 50% filled by that date.

ASSUMPTIONS:

The Department estimates approximately 8 landfills would be newly subject to the stability plan requirement under the proposed rule. Five of these additional landfills are owned by local governments, primarily counties; the remaining 3 are privately owned. Owners of these 8 landfills would need to submit a plan modification sometime prior to 2012. At the time of submittal (likely in 2011), there would be a plan review fee, which is currently set at \$1,650. Preparation of these plan modifications by environmental consultants would cost an average of \$15,000, at current rates, for the municipally owned sites, which tend to be smaller in size than the private facilities. The plans would require an average of 40 hours each of DNR staff time for plan review, at \$40/hour including salary and fringe.

STATE FISCAL ESTIMATE (one-time):

- Program Revenue: 8 x \$1,650 = \$13,200
- Program Costs: 8 x 40 hours x \$40 = \$12,800

LOCAL FISCAL ESTIMATE (one-time):

- Cost to Local Governments: (5 x \$1,650) = \$8,250 increase of plan review fee to DNR appr. 20.370 2(dg)
(5 x \$15,000) = \$75,000 estimate of environmental consulting fee
Total = \$83, 250 (2006 dollars)

Long-Range Fiscal Implications

The landfill organic stability plans will accelerate the decomposition of organic materials in landfills, lowering the risk that these facilities will need to be remediated in the future at public expense, and increasing the potential revenues from gas utilization.

Prepared By:	Telephone No.	Agency
Joseph Polasek	266-2794	Department of Natural Resources
Authorized Signature	Telephone No.	Date (mm/dd/ccyy)
	266-2794	

Fiscal Estimate — 2003 Session

Page 2 Assumptions Narrative Continued

LRB Number	Amendment Number if Applicable
Bill Number	Administrative Rule Number NR 500 Series

Assumptions Used in Arriving at Fiscal Estimate – Continued

Fiscal Estimate Worksheet — 2003 Session

Detailed Estimate of Annual Fiscal Effect

<input checked="" type="checkbox"/> Original <input type="checkbox"/> Updated <input type="checkbox"/> Corrected <input type="checkbox"/> Supplemental	LRB Number Bill Number	Amendment Number if Applicable Administrative Rule Number NR 500 Series
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Subject

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One-time Costs or Revenue Impacts for State and/or Local Government (do not include in annualized fiscal effect):

One-time state costs balance with one-time revenue from plan reviews. There is also a one-time \$83,250 cost (in 2006 dollars) to local governments in approximately 2011.

Annualized Costs:		Annualized Fiscal Impact on State Funds from:	
		Increased Costs	Decreased Costs
A. State Costs by Category			
State Operations — Salaries and Fringes		\$	\$ -
(FTE Position Changes)		(FTE)	(FTE)
State Operations — Other Costs			-
Local Assistance			-
Aids to Individuals or Organizations			-
Total State Costs by Category		\$	\$ -
B. State Costs by Source of Funds		Increased Costs	Decreased Costs
GPR		\$	\$ -
FED			-
PRO/PRS			-
SEG/SEG-S			-
State Revenues	Complete this only when proposal will increase or decrease state revenues (e.g., tax increase, decrease in license fee, etc.)	Increased Revenue	Decreased Revenue
GPR Taxes		\$	\$ -
GPR Earned			-
FED			-
PRO/PRS			-
SEG/SEG-S			-
Total State Revenues		\$	\$ -

Net Annualized Fiscal Impact

	<u>State</u>	<u>Local</u>
Net Change in Costs	\$ 0	\$ 0
Net Change in Revenues	\$ 0	\$ 0

Prepared By: Joe Polasek	Telephone No. 266-2794	Agency Department of Natural Resources
Authorized Signature	Telephone No. 266-2794	Date (mm/dd/ccyy)

Final regulatory flexibility analysis

Does the proposed rule have a significant economic impact on a substantial number of small businesses? If no, justified this response. If yes, complete the following flexibility analysis:

- A. Identify and discuss why the rule includes or fails to include any of the following methods for reducing the impact on small business.
 - 1. Less stringent compliance or reporting requirements. **There are no requirements imposed on small businesses.**
 - 2. Less stringent schedules or deadlines for compliance or reporting requirements. **There are no schedules or deadlines imposed on small business.**
 - 3. Consolidation or simplification of compliance or reporting requirements. **Not applicable.**
 - 4. The establishment of performance standards in lieu of design or operational standards. **Not applicable.**
 - 5. The exemption from any or all requirements of the rule. **Not applicable.**
- B. Summarize the issues raised by small business during the rule hearings, any changes made in the proposed rule as a result of alternatives suggested by small business and the reasons for rejecting any alternatives suggested by small business. **No issues raised by small businesses.**
- C. Identify and describe any reports required by the rule that must be submitted by small business and estimate the cost of their preparation. **None required.**
- D. Identify and describe any measures or investments that small business must take to comply with the rule and provide an estimate of the associated cost. **No costs to small businesses.**
- E. Identify the additional cost, if any, to the state in administering or enforcing a rule which includes any of the methods listed in A. **Not applicable.**
- F. Describe the impact on public health, safety and welfare, if any, caused by including in the rule any of the methods listed in A. **Not applicable.**

ENVIRONMENTAL ANALYSIS PROPOSED LANDFILL ORGANIC STABILITY RULE

Environmental Effects

Current municipal solid waste disposal practices in Wisconsin typically involve landfilling a mixture of organic and inorganic wastes together in an engineered containment system that, once finished, is designed to isolate the waste from air and water to prevent emissions of air and water pollutants to the environment. This “dry tomb” approach to landfilling has been an effective way of preventing short term problems such as groundwater contamination, and represents an advance in environmental and public health protection when compared with previous methods of waste disposal. However, it leaves significant masses of undecomposed organic materials such as food, paper, and wood in the ground. When containment systems eventually reach the end of their lifespans, they will begin to fail and will expose the organic materials to air and water, leading in turn to renewed production of methane gas (an explosion risk and a powerful greenhouse gas), toxic air pollutants, and leachate that may find its way into groundwater aquifers. Future generations will be burdened with significant costs to maintain and repair the landfills to prevent the containment from failing, or even greater costs to clean up landfills whose engineered systems have failed.

This proposed rule seeks to prevent this future problem by requiring landfill operators to implement measures to accelerate the decomposition of organic materials, so that more of this decomposition occurs while the sites are being actively filled and managed. These required measures may address organic materials either within the landfill or outside the landfill. Landfill operators may add more liquids to waste in the landfill to promote more rapid decomposition, or may pre-process waste to oxidize organics or to make the waste more amenable to decomposition in the landfill environment. Operators may also opt to divert organic wastes to other methods of management such as composting. Regardless of the method operators choose to comply with the proposed rule, the overall long term environmental effects from this rule are expected to be positive and substantial. The potential future risk posed by undegraded organic waste will be greatly reduced.

The primary environmental effect of this rule is long term. There is insufficient data at this time to accurately predict how long into the future the engineered containment systems at landfills will remain viable. Reasonable estimates indicate that they should remain viable for at least decades and possibly much longer with continued maintenance. However, we can say with some certainty that the engineered containment systems will fail at some point. This rule is designed to materially reduce the time it takes to biodegrade or stabilize the organics in a landfill so that the risks posed by undegraded organics over the long term will be greatly reduced. Stabilizing the organics more quickly will diminish the potential for generation and release of air, surface water, and groundwater pollutants because many of these pollutants (e.g., heavy metals, methane, and non-methane organic compounds) depend on the presence of organic materials for their genesis and mobilization. An added long term environmental benefit may also be realized if gas extraction systems can be downsized or eliminated as the landfill stabilizes, thereby reducing the energy requirements of maintaining the landfill.

Primary short term impacts could be either positive or negative. Accelerated decomposition during the operating life of the landfill would result in greater production of methane gas during that time period. If the gas is collected and utilized for energy recovery—standard practice for large landfills—a positive short term environmental impact will be realized because more energy would be captured from the landfilled waste, displacing fossil fuel combustion and reducing emissions of methane, a potent greenhouse gas. If the gas is not collected, the result will be higher short term greenhouse gas emissions, a negative impact. Short term impacts from diversion and pre-processing strategies may include positive impacts from higher value use of the material. Negative impacts from alternative facilities such as composting sites or incinerators are possible as well, but because these facilities are licensed and inspected by the Department, the negative impacts should be limited. Examples of negative impacts that would need to be managed and avoided include odors, compost fires, polluted runoff, air emissions from incinerators, and increased local traffic flows.

There are a number of potentially positive, short term secondary impacts from the proposed rule. Organic material may be diverted from the landfill to a higher value use, such as energy recovery. Conversely, if organic material is placed in the landfill and biodegradation is accelerated through the introduction of liquids, more methane gas will be produced in a shorter time period which can be captured and used to produce energy. An added benefit of adding liquid waste is that it provides an environmentally preferable disposal alternative for this type of waste.

There are some possible negative short term impacts. Although many landfills are currently attempting rudimentary forms of organic stabilization such as leachate recirculation, the new rules may result in landfills instituting additional, more effective measures or diverting waste to other waste handling options. This will likely increase costs and energy usage, particularly if separate collections systems are needed. It is also possible that if biodegradation is accelerated in landfills, they may require more gas-to-energy units or flares to control methane emissions. In the Clean Air Act non-attainment areas of the state this may require a higher level of emission controls from the flares or engines.

The rule would require submittal of a landfill organic stability plan by January 1, 2007 from the following eight landfills which have received plan of operation approvals since January 1, 2004:

Waste Management – Pheasant Run (Kenosha County)
Waste Management – Orchard Ridge (Waukesha County)
BFI – Lake Area Disposal (Washburn County)
Republic Services – Mallard Ridge (Walworth County)
Vernon County Landfill
Onyx – Glacier Ridge (Dodge County)
Onyx – Seven Mile Creek (Eau Claire County)
Kewaunee County Landfill

In 2004, these landfills managed approximately 38 percent of the total amount of municipal solid waste accepted by Wisconsin landfills. We expect that, on average, 3 to 4 of the remaining 27 active Wisconsin municipal solid waste landfills would need to submit organic stability plans each year after 2007, depending on the timing of expansion proposals.

There should be no significant impacts on geographically scarce resources (e.g., historic or cultural resources, scenic and recreational resources, prime agricultural lands, threatened or endangered resources, or ecologically sensitive areas). There may be a net positive impact on land use options if landfills achieve organic stability sooner and no longer pose a potential threat to nearby development due to methane migration or excessive physical settlement.

Cumulative Effects

The cumulative effect of applying this rule will be a population of landfills that will reach an organically stable state sooner than they would have under current practices, substantially reducing the long term risk landfills can pose to water resources and air quality. This rule will reduce the environmental liabilities we as a society pass on to future generations.

If organic matter is either diverted away from landfills or is broken down more quickly in landfills, it is possible that cumulatively less land would be needed for landfilling waste in Wisconsin, either in terms of smaller landfills or fewer landfills. Land that, in the absence of the rule, would have been devoted to landfilling, would be available for other uses. Diversion of organic wastes into composting, might require land to be used for siting composting facilities, but these facilities are not permanent features on the landscape like landfills.

Risk or Uncertainty

The science of organically stabilizing landfills is in its infancy. For this reason the rule allows for a wide variety of approaches to be tried and evaluated. Some will work better than others, but the knowledge gained from initial efforts will allow landfill operators to determine more effective ways of reaching organic stability. The environmental risk will be no greater than that associated with current practices.

The greatest unknowns are the degree to which we can practically reach organic stabilization and the most efficient and cost effective ways of promoting stability. Therefore the rule is written very broadly to allow for a wide range of possible approaches, and also allows for modifying or changing the chosen approach if it is not effective. There are also a number of independent studies being performed concurrently by EPA and others to identify better techniques for accelerating biodegradation or pre-processing of organic wastes which will allow landfill operators to improve their efforts over time.

In-landfill strategies for accelerating the degradation of organics in landfills generally rely on the addition of large amounts of liquids in order to optimize the conditions for microbial degradation to take place. A number of operational problems could occur if the liquid is not introduced at a proper rate and distribution. These problems could include odors, liquid seeps, oversaturation in some areas and undersaturation in others, and overloading of the leachate collection system. All of these problems can be easily remedied through changes in the operations. Existing regulations will also serve to prevent these problems. More serious problems such as slope instability could also occur but are very unlikely with the current restrictions placed on liquids addition and slope steepness.

Other strategies such as diversion and pre-processing could also result in operational problems if the systems are poorly designed, overloaded, or end use markets for the diverted material are not available. Most of these problems can be easily remedied through changes in the operations and should not result in long term impacts. Problems such as a lack of capacity or end-use markets can be longer term problems if material is allowed to be stockpiled.

Precedent

These rules are precedent setting. Although efforts to accelerate decomposition (primarily leachate recirculation) have been used at some Wisconsin landfills, this is the first attempt at a comprehensive approach to planning for and measuring progress towards reaching organic stability at a statewide level in the U.S.

This policy is expected to set a precedent for waste handling methods. Today's current practice of disposing of waste in a "dry tomb" designed landfill will be phased out as new and expanded landfills are subject to the requirements of the rule. This rule is flexible in allowing a wide range of acceptable approaches to meet its requirements, but it will foreclose the current negative environmental impact of allowing significant volumes of undegraded organics to remain in the landfill, posing a risk to human health and the environment long into the future.

The rule may lead to minor conflicts with certain aspects of current state policies relating to landfill operation, but conflicts with these policies would be likely even in the absence of the proposed rule, given recent technological trends in the landfill industry. Current regulations require that an impermeable cap be placed over any area of the landfill reaching final grade within 2 years after the area reaches final grade. For landfills which choose to treat the organics in-situ by adding liquids, the capping could reduce the effectiveness of the process. However, not capping the landfill in a timely manner can lead to greater fugitive gas emissions from the landfill. Either a balancing of these goals will need to be reached (development of temporary caps which limit gas emissions but allow liquids to pass through), or alternative designs such as liquid distribution systems placed below the final cap will need to be further developed. Similarly, policies limiting the areas of a landfill where leachate can be recirculated into the waste mass may need to

be re-examined in order to ensure that all waste in a landfill can be accelerated towards organic stability.

If a landfill operator chooses to comply with the proposed rule through waste diversion or pre-processing and a useful product or energy is recovered, or if additional landfill gas is recovered and converted to energy, this rule would further support the waste hierarchy specified in ch. 287, Wis. Stats.

Controversy

Although the waste industry generally recognizes that current landfill operations and designs may pose substantial long term liabilities, there is some disagreement over the best approach to address this concern. Some in the industry support a performance- and risk-based approach to reducing the post-closure care burden on landfill operators as a means of motivating adoption of techniques that would accelerate organic degradation in landfills. Another approach that has been suggested is to proceed more slowly and allow an extended period (perhaps a decade) of pilot projects to provide the opportunity for development of a uniform, proven method for accelerating organic stability in landfills, instead of implementing the near term, goal-oriented planning process envisioned in the proposed rule.

In addition, landfill operators have expressed concerns that the effects of this rule are focused on them, but that the problem of proper long term solutions to waste management problems is a broader societal concern and should consider regulatory, economic, and cultural solutions beyond the landfill. For example, it may not be possible from a business standpoint for a landfill operator to divert organic wastes from his landfill because a competitor might accept those wastes and gain a competitive edge.

Two other issues may be controversial in the short term.

First, these rules may force solid waste management costs that were previously deferred to future generations to be realized immediately in increased prices charged by landfill operators to pay for managing waste according to this rule. Innovative waste handling methods are likely to have a greater up-front cost than current methods. It is not certain that landfill operators will be able to pass costs on to solid waste generators due to competitive concerns, but if they do this could generate some controversy. In addition, changing waste handling methods at the consumer level (e.g., separate collection of diverted wastes) may result in higher disposal fees due to the additional handling of the material, to the extent that the salvage value of the material does not outweigh the collection and processing cost. However, the precedent for separate handling of discarded resource streams at a net increased short term cost has already been set for recycling, and this has met with strong public support in Wisconsin.

Second, the science of accelerating the degradation of organics within landfills is not well developed. Therefore, there will likely be a great deal of trial and error in trying to develop efficient and cost effective methods for the in-situ treatment of the waste. It has

been suggested that this rule is premature until the science has been better established. However, the rule is structured to encourage flexibility and innovation and should serve to improve the science more quickly.

Alternatives

No Action:

If we continue to design and operate landfills in accordance with our current practices, we can anticipate that a reservoir of undegraded organics will remain in the landfills well into the future. To preclude groundwater contamination and methane emissions from these landfills, we will need to expend considerable future dollars to maintain the engineering controls at each landfill. Conversely, if the engineering controls are not maintained, we can expect substantial negative environmental impacts from the release of leachate, methane gas, and air pollutants.

More Research:

Because the use of in-landfill techniques to stabilize organics (“bioreactor” landfills) is still in its infancy, it has been suggested that the State provide financial incentives to individual landfills to establish pilot projects. The information gained from these projects could then be used to establish rules which are much more specific and predictable in their outcomes. Running pilot projects like these to their conclusion could delay implementation of organic reduction in landfills on a more comprehensive basis for decades.

Although the science of bioreactors is not mainstream at this point in time, there has been considerable work done on pilot bioreactor projects nationwide. In addition, other in-situ organic reduction strategies such as leachate recirculation have been utilized on a more common basis. Finally, in-situ strategies are not the only available approaches that can be taken. Diversion and pre-processing can also be used and these strategies are well understood.

Landfill Bans:

Another approach that has been suggested is to ban certain waste streams from landfills. This strategy has been used successfully with some easily recyclable waste streams, and could be used to ban specific organic waste streams from landfills. A ban on landfilling of undegraded organics is currently being phased in over time in the European Community. The short term impact would likely be to cause disruption and mismanagement of the banned waste streams until the infrastructure and markets could be set up to effectively to collect and handle the material. The long term impact of banning this material would likely be landfills that reached organic stability significantly faster and with more certainty. In addition, a ban on landfilling of organic material would establish a very level competitive playing field for landfill operators.

Mandatory Pre-Processing:

Another alternative similar to landfill bans would be to mandate that all organic waste streams would have to undergo a processing step to significantly reduce the undegraded organics content prior to landfilling. Two examples of this approach would be incineration and in-vessel composting. The short term impact would be higher costs to handle the waste (partially offset through energy recovery), but the long term impact would be to reach organic stability before the waste is placed in the landfill, resulting in more certainty in the outcome.

ATTACHMENT 1

SUMMARY OF PUBLIC COMMENTS

INTRODUCTION

The Department held two hearings in connection with the proposed rule. The first hearing was held in Eau Claire on April 11, 2006; the second was in Waukesha on April 12, 2006. Dan Graff of the Bureau of Legal Services presided over both hearings. Additional Waste and Materials Management program staff attending the hearings were Gene Mitchell in Eau Claire and Brad Wolbert in Waukesha. Two persons filled out appearance slips at the Eau Claire hearing, and both made comments. Six persons filled out appearance slips at the Waukesha hearing, and three of them made comments. All comments at both hearings were provided in a cordial, non-confrontational manner. The Department received 2 sets of written comments during the public comment period for the draft rule revisions, and received additional comments from the Legislative Council Rules Clearinghouse.

Comments and the Department's responses are provided below. Many of the comments have been edited or paraphrased for the sake of brevity or clarity, or where multiple commenters made substantially the same point. In no case have we attempted to alter the substance of a comment.

GENERAL COMMENTS

1. Comment: Organic materials are valuable resources with many uses, and demand is increasing for these materials. Organic materials can be better utilized outside of landfills. [Associated Recyclers of Wisconsin (AROW); Waukesha County Environmental Action League (WEAL)]

Response: The Department agrees with the comment with regard to many organic materials. Some organics are too contaminated or complex for currently available technology to prepare for reuse. The proposed rules would not pose a barrier to, and might encourage, market forces that reward the diversion of organic materials from landfills. Landfill operators that have control over collection systems might be more inclined to explore diversion programs as a way of complying with the proposed rule.

2. Comment: The proposed rules don't go far enough—the Department should ban non-inert materials from landfills. [Terry Mesch]

Response: The extent of the Department's authority to ban such a broad class of materials from landfills through rulemaking is not clear. Existing landfill bans are established in statutes (i.e., s. 287.07, Wis. Stats.). We are also concerned that processing capacity and markets could not accommodate the volume of organic material that would result from a broad-based ban on organics in landfills.

3. Comment: Waste stabilization strategies that emphasize the use of organics within a landfill run directly counter to the Wisconsin DNR's "Moving Toward Zero Waste: A Shared Vision for Wisconsin's Future." [AROW; WEAL]

Response: The primary purpose of the proposed rules stems directly from one of the 3 key goal areas of the "Moving Toward Zero Waste" report which is being used to guide policymaking in the DNR's Waste and Materials Management program. That goal area is "minimize the potential

for environmental impacts of landfills.” The proposed rule would allow, but not emphasize, the continued acceptance of some organics in landfills so long as measures are implemented to ensure that these organics are decomposed at a more accelerated pace so that the long term potential for environmental impacts is minimized.

Minimizing waste is another of the 3 key goal areas in the “Moving Toward Zero Waste” report, and the proposed rules also have the potential to reinforce waste minimization by offering landfill operators an option for compliance through diversion of organics.

4. Comment: Landfilling organic materials ranks very low on the waste management hierarchy and should be viewed as a last resort for these materials. Landfill stabilization should be brought about by means other than landfilling organics. [AROW]

Response: We generally agree with this comment. However, we do not believe it is possible in the short term to pursue landfill stabilization without acknowledging the fact that, without a ban on landfilling and a mandated preprocessing step for organic materials, such as incineration, the waste industry, municipalities, businesses and residents will continue to dispose of organic wastes through landfilling. The purpose of the rule is to manage this situation in a way that reduces the consequent risk to future generations of the wastes our generation disposes of today.

5. Comment: Landfill operators will choose leachate recirculation as the preferred option under this rule, because it increases profitability. Leachate recirculation is not given an opportunity for public comment because it is often proposed in the Plan of Operation, which occurs well after the Feasibility stage of landfill siting when the public has a chance to comment. [WEAL]

Response: The Department agrees that most landfill operators would likely rely on leachate recirculation or bioreactor operation to comply with the proposed rule. Many operators have already embraced the concept of leachate recirculation because of the economies it offers. To the extent that adding liquids into the landfill’s waste mass speeds decomposition and reduces long-term risks, we view this as a positive development. Leachate recirculation affects more than just costs, such as as reducing impacts on wastewater treatment plants and the associated trucking and fuel costs of transporting leachate from landfills to treatment plants.

Regarding the practice of waiting until the plan of operation to propose leachate recirculation, we don’t view this widespread operational practice as a site-specific feasibility issue in most cases. We would consider comments on leachate recirculation in connection with any landfill feasibility report, even if leachate recirculation was not specifically proposed at the feasibility stage, because we recognize that it is becoming standard practice among landfill operators.

The Department recently conducted rulemaking, including public participation, for a package of changes to landfill design and operational standards that included a codification of leachate recirculation requirements.

6. Comment: The proposed rule will not promote innovative methods to minimize waste of organic materials. Landfill operators will not of their own volition segregate and divert organic materials once they are delivered to the landfill. The proposed rule leaves too much of the decision making for waste minimization in the hands of landfill operators. Instead, the DNR should proactively endorse programs to separate organic materials at the source with composting as the preferred option. [WEAL]

Response: As noted above, the proposed rule is not intended as a waste minimization rule, but as a means of reducing the long-term risk associated with the conventional landfilling of organic materials. As a practical matter, we have direct authority over MSW landfills, but the Department does not have direct authority over the generators of MSW. We believe that a combination of requirements on landfill owners directly will also have indirect effects on MSW generators. Public and private haulers may be in a better position to implement source separation at the collection point. Landfill operators with collection operations that service private businesses such as restaurants and grocery stores may also examine source separation more closely, particularly if demand for compost continues to increase. The Department endorses such programs, where collection, processing, and market infrastructure ensure environmentally sound operations.

7. Comment: Recently there were attempts in Iowa and Illinois to overturn landfill bans on yard waste on the basis that bioreactor landfills needed the organic material. Similar efforts could be seen in Wisconsin as a result of the proposed rule and the likelihood it will promote bioreactors and leachate recirculation. [WEAL]

Markets for compost have relatively recently caught up with the volume of composted yard waste being collected and diverted from landfilling. Additional organic materials could and should be diverted for composting. We agree with DNR's Zero Waste efforts and are concerned that the emphasis on landfilling in the proposed rule could cause the loss of compostable organics back into landfills. [James Syburg, White Oak Farm LLC]

Response: The Department would firmly oppose efforts to eliminate the yard waste landfill ban in s. 287.07, Wis. Stats. We believe the ban has been very effective in preserving valuable source-separated organic materials and beneficially and sustainably using them on the land to preserve nutrients, improve soil, and prevent erosion. Each year since the ban went into effect in 1993, several hundred thousand tons of yard waste have either been collected for composting or managed on site, substantially reducing the need for new landfill capacity. The demand for these materials continues to grow. In any case, the experience with Wisconsin landfills is that yard waste is not necessary to support vigorous generation of landfill gas or to assure high methane levels in landfill gas.

8. Comment: I'm proud that Wisconsin is in the forefront on the environmental issues related to landfills. My friends in Illinois do not have the same recycling ethic and concern for keeping materials out of landfills that we do in Wisconsin, and I'm concerned about the importation of wastes into Wisconsin for landfilling here. I'm not comfortable with the discretion left to landfill operators under the proposed rule unless there are economic incentives and more enforceability. [Helen Arens Bera]

Response: The draft rule contains a stability planning requirement, but landfill operators would have discretion to choose the method they preferred for meeting the rule goals. We believe there are significant economic incentives to achieving organic stability in landfills on a faster schedule. Landfill operators are responsible for care and maintenance of their facilities in perpetuity; if the landfill can be stabilized sooner, the care and maintenance will cost less. The likelihood that such a landfill will require costly remediation will also be lowered. We are also working to develop a linkage between the required amount of financial responsibility proof that landfill operators are required to post, and the degree of stabilization of the landfill. This will provide another incentive for a landfill to achieve organic stability.

With regard to landfilling in Wisconsin of wastes originating out-of-state, we don't believe the proposed rule would have a significant effect on the volume of this material. The rule would require landfill operators to include in their organic stability plans all incoming waste regardless of origin, and we would expect measures used on out-of-state waste to be identical to those used on Wisconsin-sourced waste.

9. Comment: The Department is overstating the problem of current landfill design. [Waste Management (WM)]

Response: The Department would like to re-emphasize that today's highly engineered landfills are very successful at preventing groundwater contamination due to leachate production and methane migration due to gas emissions. We expect these designs to remain effective during the operating life of the site and for at least 40 years following landfill closure. What we don't know is when engineering systems, particularly the landfill cap, will begin to break down, and what the magnitude of the consequences of that breakdown will be. As Waste Mgmt has pointed out, not all unengineered landfill sites have resulted in multi-million dollar remediations. On the other hand, many have. Today's engineering systems that are so protective of the environment may break down slowly and allow the natural environment to absorb the impacts of increased gas and leachate production. Or, the breakdowns could have more profound financial and environmental impacts. We just don't know at this point. But we believe it is better to anticipate reasonable, potential problems and act to prevent or lessen their consequences, than it is to pass off those consequences to future generations.

10. Comment: The Department is being extremely aggressive with unproven technology. [WM, Republic]

Response: The Stability Workgroup that collaborated with the Department to develop these rules also developed a table of over 20 strategies that could be employed either individually or in combination to meet the requirements of these rules. These strategies range from proven technologies and methods to technologies that are currently in the pilot project stage. The rules allow the landfill owner/operator to choose which technologies will best suit their needs. The rules also allow the ability to phase in an effort, rather than implementing the full plan on day one. In addition, the rules provide a high degree of flexibility to change to alternative approaches if the current approach is not satisfactory. Finally, the Department has recommended that a peer review group be established after the initial 5 years of implementation of the rules to evaluate the extent to which the goals are achievable with currently available technology and methods, and whether other changes to the rules are warranted in light of the experience we have gained.

11. Comment: We insist that the recommendation to convene a panel of independent experts in the field of landfill design and operations in 5 years must be tied directly to the regulation due to the many unknowns in the science of stabilizing landfills. [WM]

Response: The Department believes it is not appropriate to put a commitment of this nature in these administrative rules. However, we agree that the recommended 5 year evaluation by a panel of independent experts is an important adjunct to this rule. In order to provide the level of commitment requested in this comment, we will recommend that the Natural Resources Board direct the Department to convene the expert panel 5 years after the implementation date of the

rule and report back to the Natural Resources Board with a proposed package of rule updates, as appropriate, within 1 year of convening the expert panel.

12. Comment: Alternative caps need to be directly tied to this regulation. The current regulation needs to be modified prior to or at the same time as implementing stability plans. [WM, Republic]

Response: This rule specifies the content and format of stability plans. It is intended to work in concert with other, existing rules which govern activities such as waste processing, leachate recirculation, bioreactor operation and alternative cap design. The Research, Development and Demonstration plan rules (NR 514.10) became effective on December 1, 2005, and will allow trials to determine whether alternative final cover systems are protective of the environment. However, there is no justification for a preemptive decision about the use of such designs. Water or leachate can still be inserted into the waste mass after conventional cover placement, if needed. Conventional final cover systems play a key role in controlling landfill gas emissions and enhancing the performance of gas extraction systems. If an operator succeeds in raising the municipal solid waste (MSW) moisture content to field capacity, it is not clear whether significant amounts of liquids need to be added for substantial periods of time after closure of a landfill. The science and engineering of alternative landfill cover systems is much less well developed than is that for accelerated waste decomposition, and we are not prepared to make general modifications to conventional final cover design for MSW landfills with this rule. The decision to implement an alternative cap is more appropriately made on the merits of a specific alternative cap proposal using the criteria set forth in NR 514.10.

13. Comment: The estimates cite only costs for WDNR review and the stability plan initial preparation for a very basic plan. The fiscal estimate does not reflect costs for construction, monitoring, record keeping and reporting. Also for a full blown bioreactor, the engineering costs will be substantially more than the \$15,000 estimated. [WM, Republic]

Response: The purpose of the fiscal estimate is to estimate direct revenues and costs to State and local governments. The rule requires that landfills submit a stability plan and the fiscal estimate reflects this for municipally owned facilities. Implementation costs for waste diversion, pre-processing or in-situ treatment are beyond the scope of the fiscal estimate.

14. Comment: The rule doesn't include all landfills and that could create competitive disadvantages. [WM]

Response: The Department, after previous discussions with the Stability Workgroup, concluded that it would be impracticable to apply stability requirements to all landfills at once. There are a number of already-operating landfills that have completed a significant portion of their filling, and safely retrofitting stability measures might not be feasible at these sites. We also recognized that the Department approved a relatively large number of significant landfill expansions beginning in 2004, and we wanted the proposed stability planning requirement to apply to these facilities. Therefore, we proposed the 2004 applicability date to ensure the inclusion of recently approved/expanded landfills. We also proposed a 2017 deadline for landfills approved before 2004 but still operating, to ensure that landfills that were approved prior to 2004 but are currently "mothballed" would not be able to avoid eventual compliance with the stability planning requirement.

Based on further discussions with our Stability Workgroup, we are proposing to eliminate the 2017 date and require instead that landfills that have not filled over 50% of their approved

capacity by 2012 must submit a stability plan. This partially addresses the competitive advantage issue in the near-term, and we believe it strikes a reasonable balance for phasing in these requirements given the impracticability of imposing the requirements on all landfills as of a single date.

COMMENTS ON SPECIFIC PROPOSED RULE PROVISIONS

15. Comment: Section NR 514.07(9)(b)5 references the definition of landfill organic stability in NR 500.02(120g). This definition was supposed to be a placeholder. It was never approved or discussed by the advisory committee, contrary to the Department's stated intent. [WM]

Response: This definition was developed by the Stability Workgroup and adopted as part of a previous rule package. The definition is necessary because the landfill organic stability plan, which is the subject of this rule making package, is intended to move the landfill towards a state of landfill organic stability at a rate faster than conventional landfill operations. The proposed rule package does not require that the landfill achieve landfill organic stability within a specific time frame.

The Department has received comments previously that indicate some landfill owner/operators are concerned that the definition of landfill organic stability would be used as the basis for the Department to require that a landfill reach organic stability before allowing landfill engineering systems (e.g., the landfill gas extraction system) to be reduced or shut off. These rules do not impose any such requirement, and the definition is not a basis for the Department to take that position. In the situation where a landfill owner/operator wishes to reduce or terminate a landfill maintenance activity such as gas or leachate extraction, the appropriate basis for making that determination is whether the action will put human health or the environment at risk. The mechanism for making that determination would be a site-specific risk analysis which takes into account existing standards and receptors. For example, an appropriate means for evaluating reducing gas extraction activities would be to determine what the levels of methane and other gas emissions would be at the point of standards application as a result of the proposed action, rather than determining if the landfill is still producing gas. This allows us to take into account attenuation factors such as gas degradation as it passes through the soil cover material, and atmospheric dispersion.

16. Comment: NR 514.07(9)(b)7; NR 514.07(9)(c)1; NR 514.07(9)(c)4; NR 514.07(9)(e). The goals of landfill stability as defined in the proposed rule are not supported by known science and technology. NR 514.07(9)(c)1 requires a landfill gas generation rate of $k=0.078$ to meet the goal over the active and long term care period of the landfill. The US EPA Land Gem model uses a k value of 0.04. There is little data to support the ability to sustain a k value of 0.078 over the life of site and long term care period. The issue of alternative cap design is raised again as composite capped facilities will see a reduced amount of available liquid resulting in a significant decrease in gas generation. [Republic, WM]

Response: The default k value used by EPA (0.04) in their model is for conventional landfill operations. We believe a k of 0.078 is conservative for a landfill which is adding moisture to achieve field capacity and optimizing conditions for organic decomposition. We expect that higher levels of decomposition will be maintained during the operating life of the site. The landfill industry is refining other methods of continuing moisture additions after closure, and we know from experience that engineering research and on-site expertise have led to advantageous

technical innovations. Landfill operators also have other options for reducing the timeframe needed to achieve organic stability, including waste pre-processing and diversion.

We also recognize that there is insufficient data at this point to know that these goals can be met on a consistent basis. That is why we are proposing to convene an independent panel of experts 5 years after implementation of the rules to evaluate the data generated and progress made, and to recommend changes to the rule to reflect our broader knowledge base at that time.

17. Comment: NR 514.07(9)(b)7 requires a contingency plan outlining measures to be taken if periodic evaluation of the landfill organic stability efforts indicate the facility is unlikely to achieve the goal in par. (c). While the Department has identified these goals as being non-enforceable, the consequence for not meeting the stability plan milestones will be to require that the contingency plan be implemented. The proposed rule should not include the contingency requirement but rather allow for re-evaluation of available technology and information as it becomes available to industry. [WM, Republic]

Response: The framework of the landfill organic stability plan is such that it allows great flexibility for the landfill owner/operator in determining how to reach the goals, including setting milestones against which to assess progress. It allows the landfill owner/operator to make adjustments along the way. The purpose of the contingency plan is to provide a level of accountability if the plan's milestones are not being substantially met and allow the Department to require a landfill owner/operator to implement a new plan if the landfill owner/operator does not do so on his own. The Department has committed to not requiring implementation of a contingency plan at individual landfills until after the independent expert panel has had an opportunity to review the first 5 years of progress statewide and make recommendations for changes.

We strongly agree that the industry should be encouraged to re-evaluate both their existing plans and their contingency plans as available technology and information become available. The rule proposal already encouraged this approach through annual and 5 year evaluations for existing plans, and we have added language to the contingency plan requirement for keeping the plan updated.

18. Comment: In summary, these comments are a sincere plea to reject this proposed rule until extensive changes are made reflecting scientific knowledge and accepted operating practices. [WM, Republic]

Response: The Department has worked closely with an external advisory group for over 2 years to develop the proposed rules. The rules are structured to be low-risk, flexible, and to allow the landfill owner/operator to make the decisions regarding implementation of strategies for reducing degradable organics in landfills, as well as the ability to change strategies as necessary. We believe that the current state of the science provides sufficient justification for moving forward now to addressing the problem, and a wide array of means to do so with a reasonable chance of success. We must reiterate that landfill stability can be achieved by waste diversion as well as by accelerated decomposition or pre-disposal processing, and the rule does not predispose the choices that a landfill operator can make. In addition, we are recommending that an expert peer review panel be convened within 5 years after implementation of the rule to recommend adjustments, as necessary. We recognize that not all strategies have the same level of scientific knowledge, but we believe that by moving forward with this rule now we will support the necessary step of going beyond the research and pilot plant stages to full scale application of

reducing overall environmental effects of landfilling. Delaying this rule will delay application of established as well as innovative processes to full scale operating facilities.

LEGISLATIVE COUNCIL RULES CLEARINGHOUSE COMMENTS

19. Comment: When a rule SECTION renumbers a provision in the administrative code, the treatment clause for the SECTION should identify the renumbered provision by a complete citation to the provision. This style was not followed in the treatment clauses in SECTIONS 9 and 13. For example, the treatment clause in SECTION 9 should state “NR 514.07 (9) is renumbered NR 514.07 (9) (a) and amended to read:”.

Response: We have made the requested changes.

20. Comment: Section NR 514.07 (9) (c) 1. to 3. contain text that includes chemical abbreviations and text in parenthesis. The preferred drafting style is to avoid both undefined abbreviations and parenthetical text. See s. 1.01 (6) and (8), Manual.

Response: We have eliminated the chemical abbreviations and taken the text out of parentheses.

21. Comment: In s. NR 514.07 (9) (e), “(b) 7.” should replace “(b) 7”.

Response: We have made the requested change.

22. Comment: The inclusion of “respectively” in the treatment clause in SECTION 13 is unnecessary and contrary to preferred drafting style. It should be removed from the rule.

Response: We have made the requested change.

23. Comment: In the analysis accompanying the rule, the list of statutes interpreted includes ss. 289.24 and 289.30, Stats. These references include provisions that are not interpreted by the rule. Can the department be more specific and cite particular subsections within these sections? In addition, it is not clear why this list of statutes interpreted includes s. 289.61, Stats., and excludes s. 289.41, Stats., as the rule makes no changes in solid waste management fees but does amend one financial responsibility requirement.

Response: We have changed the list of statutes interpreted to be more specific and have substituted the correct references to statutes for the proposed rule changes.

24. Comment: In the analysis accompanying the rule, the list of statutes providing authority for the rule includes ss. 289.05 and 289.06, Stats. Can the department be more specific on which subsections in these sections provide this rule-making authority? Sections 289.24 (1) and 289.30 (4), Stats., also provide explicit authority for rule-making on subject matter covered by the rule. It is not apparent why these statutes are also not included in the list of statutes providing authority for the rule. Finally, this list of statutes providing authority for the rule includes s. 289.07, Stats., inappropriately, as this section does not explicitly grant rule-making authority to the department.

Response: We have changed the list of statutes providing authority for the rule to be more specific, and have added the statutory references included in the list of statutes interpreted where these grant rule-making authority.

25. Comment: The first sentence in s. NR 514.07 (9) (c) (intro.) refers to the provisions in subds. 1. to 3. as “characteristics” and in subd. 4. as “the timeframe.” The second sentence in par. (c) (intro.) refers to the provisions in subds. 1. to 4. as “goals.” To avoid any ambiguity in the interpretation of these two sentences, the department should use consistent terminology to refer to the provisions in subds. 1. to 4. Also, sub. (9) (c) (intro.) should be redrafted to meet the provisions of s. 1.03 (8), Manual; namely, it should end with a colon and lead into the subdivisions that follow.

Response: We have made the terminology consistent by eliminating the references to “characteristics” and “the timeframe,” and substituting “goals” for both. We have substituted the colon as suggested.

26. Comment: It is not clear when the characteristic in s. NR 514.07 (9) (c) 3. is to be applied. Is it upon site closing or some unspecified time after site closing?

Response: We have changed the wording slightly to clarify that this provision would be expected to be reached sometime after site closing.

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
REPEALING, RENUMBERING, RENUMBERING AND AMENDING, AMENDING AND
CREATING RULES

The Wisconsin Natural Resources Board proposes an order to repeal NR 514.10(1)(b)(intro.); to renumber NR 514.10(1)(a)1. and (b)1. to 3., 5. and 6.; renumber and amend NR 514.07(9) and 514.10(1)(a)2. and (b)4.; to amend NR 504.06(5)(dm) and (e), 504.095(1)(d) and (2)(b), 506.135(1)(a) to (e) and (h), (2)(a) to (c) and (e) to (f), 512.09(6)(a), 514.07(7)(c) and (i), 514.10(1)(title), 516.07(2)(c)2., 516.08(1) and 520.10; and to create NR 514.07(9)(b) to (f) pertaining to landfilling of solid waste.

WA-15-06

Analysis prepared by the Department of Natural Resources

Statutes Interpreted

ss. 289.24(1), 289.30(4), and 289.41, Wis. Stats.

Statutory Authority

ss. 289.05(1) and (3), 289.06(1), 289.24(1), 289.30(4), and 227.11, Wis. Stats.

Explanation of Agency Authority to Promulgate the Proposed Rule under the Statutory Authority

In ss. 289.05, 289.06 and 289.07, Wis. Stats., the department has the duty and authority to promulgate rules implementing ch. 289, Wis. Stats., and to conduct or direct investigations and studies related to solid waste disposal.

Related Statute or Rule

None.

Plain Language Analysis of the Proposed Rule

These proposed rule revisions applicable to municipal solid waste (MSW) landfills require that measures be taken by MSW landfill owners to reduce the long-term environmental and public health risks of their landfills. An additional proposed revision makes a technical change in the testing required for newly installed landfill liners. The proposed rules also include drafting format and style corrections to existing rules.

Summary of and Preliminary Comparison of Existing or Proposed Federal Regulations Intended to Address the Activity to be Regulated by the Proposed Rule

None.

Comparison of Similar Rules in Adjacent States (MN, IA, IL and MI)

None of surrounding states' rules address measures to explicitly reduce the long-term risk of MSW landfills. Minnesota's rule prohibiting the landfilling of unprocessed municipal solid waste originating

from the Twin Cities metropolitan area unless processing capacity is unavailable ensures that a significant amount of organic material will either be incinerated or taken out of Minnesota for disposal.

Summary of the factual data and analysis methodologies that the agency used in support of the proposed rules and how any related findings support the regulatory approach chosen for the proposed rule.

The proposals related to reducing the long-term risk of municipal solid waste landfills and the change in landfill liner testing were products of work groups composed of department staff and external stakeholders. Many of the members have experience in numerous other states and countries. The cumulative solid waste management experience of the groups' members was multiple hundreds of years.

Any analysis and supporting documentation that the agency used in support of the agency's determination of the proposed rule's effect on small business under s. 227.114, Stats., or that was used when the agency prepared an economic impact report.

In the past (pre-1985), there were a large number of small landfills in Wisconsin. With the enactment of the Federal RCRA sub-title D regulations, small landfills started to close due to the requirement and the cost of compliance. Presently, there are no active landfills that meet the definition of a small business.

Effect on Small Businesses

No small businesses are affected by this rule.

Agency Contact Person

Dennis Mack, Section Chief
608-267-9386
dennis.mack@dnr.state.wi.us

SECTION 1. NR 504.06(5)(dm) is amended to read:

NR 504.06(5)(dm) A geotextile shall be used to line the base and sidewalls of all leachate collection trenches and shall be placed directly over the geomembrane component of a composite liner or the clay component of a clay liner. The geotextile shall have a minimum weight of 12 oz/yd², and ~~shall~~ may not be overlapped over the top of the trench. The geotextile specifications, including manufacturer's data for grab and puncture strength, shall be used to demonstrate that the geotextile can resist damage due to impact and puncture when aggregate is placed over the geotextile.

SECTION 2. NR 504.06(5)(e) is amended to read:

NR 504.06(5)(e) The bedding material utilized in backfilling the leachate collection pipe trenches shall have a uniformity coefficient of less than 4, a maximum particle diameter of 1½ inches, a maximum of 5% of the material which passes the number 4 sieve and consist of rounded to subangular gravel. A minimum depth of 4 inches of gravel shall be placed in the trenches prior to installation of the leachate pipes. The backfill shall also be placed such that a minimum of 6 inches of material exists above the top of the pipe and within the trenches. An additional 12 inches of material shall be mounded above the trench. In cases where the particle size of the drainage blanket is significantly less than the collection trench bedding, a properly designed graded soil filter or geotextile shall be utilized to minimize the

migration of the drainage blanket material into the collection trenches. Limestone and dolomite ~~shall~~ may not be used in the leachate collection system unless no other suitable material is reasonably available.

SECTION 3. NR 504.095(1)(d) is amended to read:

NR 504.095(1)(d) Leachate recirculation distribution systems ~~shall~~ may not discharge leachate within 100 lateral feet of the exterior sideslope final grades unless otherwise approved by the department in writing.

SECTION 4. NR 504.095(2)(b) is amended to read:

NR 504.095(2)(b) The leachate distribution system shall be designed to minimize evaporation of the leachate and volatilization of compounds in leachate. The leachate distribution system shall be designed to distribute the leachate in a manner that results in its absorption into the waste mass after application. Spray irrigation systems that are designed to promote evaporation ~~shall~~ may not be utilized.

SECTION 5. NR 506.135(1)(a) to (e) and (h) are amended to read:

NR 506.135(1)(a) Leachate recirculation distribution systems ~~shall~~ may not discharge leachate within 100 lateral feet of the exterior sideslope final grades, unless otherwise approved by the department in writing.

(b) Leachate ~~shall~~ may not be introduced in areas with less than 20 feet of waste over the leachate collection system.

(c) Leachate ~~shall~~ may not be recirculated in areas that do not have active gas extraction systems installed. The gas extraction systems shall be operated in accordance with the approved leachate recirculation plan to control any additional gas generated by leachate recirculation and minimize release of uncontrolled gas.

(d) Leachate recirculation shall be suspended upon discovery of warning symptoms, as identified in the approved leachate recirculation plan. Leachate recirculation ~~shall~~ may not resume in the area where the problem occurred until changes are made to the system or the warning symptoms have declined to acceptable levels. The operator shall notify the department in writing within 7 days of the discovery of warning symptoms and suspension of leachate recirculation. Alternative notification procedures may be approved by the department in writing.

(e) Leachate recirculation shall be suspended whenever any of the failure thresholds identified in the approved leachate recirculation plan are exceeded. Leachate recirculation ~~shall~~ may not resume until the department has reviewed and approved changes to the system that will result in meeting the thresholds. The operator shall notify the department within 3 days of the discovery of exceeding any failure threshold. Alternative notification procedures may be approved by the department in writing.

(h) Leachate ~~shall~~ may not be recirculated where daily or intermediate cover consists of low permeability clay soil or low permeability wastes, unless the daily or intermediate cover is removed or scarified.

SECTION 6. NR 506.135(2)(a) to (c) and (e) to (f) are amended to read:

NR 506.135(2)(a) Leachate ~~shall~~ may not be applied in a manner that results in ponding of leachate on the surface.

(b) Leachate ~~shall~~ may not be applied in a manner that allows runoff of leachate beyond the application area.

(c) Leachate ~~shall~~ may not be applied using a spray system or any other distribution system that promotes evaporation of leachate or volatilization of compounds in leachate. Spray systems such as spray bars on the back of a tanker truck may be acceptable if the spray is directed downward.

(e) Leachate ~~shall~~ may not be applied during wet or windy conditions that would prevent containment of the leachate to the application area.

(f) Truck traffic shall be routed around the application area until ~~such time as~~ the application area is covered to prevent tracking of leachate.

SECTION 7. NR 512.09(6)(a) is amended to read:

NR 512.09(6)(a) Landfills shall meet the requirements of pars. (b) ~~to~~ and (c) where they will accept municipal solid waste and contain leachate collection lines that exceed 1,200 feet from the end of each cleanout to the toe of the opposite slope. Where the requirements of this subsection differ from other requirements of this chapter, these requirements shall take precedence.

SECTION 8. NR 514.07(7)(c) and (i) are amended to read:

NR 514.07(7)(c) ~~Calculations of proposed loading rates.~~ Proposed loading rates for leachate recirculation shall be calculated for each leachate drainage basin. Calculation methods shall be defined so that supplemental calculations can be performed to accommodate changes due to field observations, waste characteristics, weather and other factors. Factors to be addressed shall include recirculated volumes of leachate, precipitation based on local records and on-site data, field capacities and absorptive capacities of the landfilled waste, waste filling rates, separation distances and elevations of distribution piping or wells, and loss of water by waste decomposition processes and water vapor in landfill gas.

(i) ~~Landfill gas extraction.~~ The plan of operation shall include diagrams and narrative concerning gas extraction equipment, fittings and devices to be used to extract gas produced as a result of leachate recirculation. The plan of operation shall contain a schedule of operation of the gas extraction system in those cells which are subject to leachate recirculation.

SECTION 9. NR 514.07(9) is renumbered NR 514.07(9)(a) and amended to read:

NR 514.07(9)(a) The plan of operation for all new and expanded municipal solid waste landfills submitted to the department after January 1, 2007 shall include a plan for significantly reducing the amount of degradable organic material remaining after site ~~closure~~ closing in order to materially reduce the amount of time the landfill will take to achieve landfill organic stability. All Owners and operators of all municipal solid waste landfills that have a plan of operation approved between January 1, 2004 and January 1, 2007 shall submit a plan modification to the department no later than January 1, 2007 for significantly reducing the amount of degradable organic material remaining after site ~~closure~~ closing in order to materially reduce the amount of time the landfill will take to achieve landfill organic stability. Owners and operators of all other municipal solid waste landfills at which filling has not exceeded 50% of the landfill's approved capacity by January 1, 2012, shall submit a plan modification to the department no later than January 1, 2012, for significantly reducing the amount of degradable organic material remaining after site closing in order to materially reduce the amount of time the landfill will take to achieve landfill organic stability. Waste that has already been disposed of prior to the date the plan is approved by the

department is not subject to the planning requirement, but may be included in the plan at the discretion of the landfill operator.

Note: “Closing” is defined in s. 289.01(5), Stats., as “the time at which a solid or hazardous waste facility ceases to accept wastes, and includes those actions taken by the owner or operator to prepare the facility for long-term care and to make it suitable for other uses.”

SECTION 10. NR 514.07(9)(b) to (f) are created to read:

NR 514.07(9)(b) Landfill organic stability plans required by this subsection shall include the following information:

1. An overview of the plan.
2. An initial analysis of the composition and quantity of materials that will be accepted by the landfill, including a classification of organic materials and percentage of organically inert materials, and a description of how the analysis was performed.
3. A description of measures to be undertaken by the landfill owner or operator, or by others, including diversion to non-landfill management of organic material, pre-landfill mechanical or biological treatment of organic material, or in-landfill treatment of organic material, that will significantly reduce the amount of degradable organic material remaining after site closing and shorten the time the landfill will take to achieve landfill organic stability.
4. A schedule for implementing the plan.
5. The anticipated outcome of implementing the plan, relative to the landfill organic stability goals in par. (c) and the definition of landfill organic stability in s. NR 500.02(120g).
6. A description of how the effectiveness of the implemented plan will be monitored and evaluated. Plans shall include a description of the methods that will be used to monitor and evaluate the progress of the facility in implementing the plan, and measurements or milestones to be used in evaluating progress towards the goals in par. (c) and the plan’s anticipated outcome.
7. A contingency plan outlining measures to be taken if periodic evaluation of the landfill organic stability efforts indicate the facility is unlikely to achieve the goals in par. (c).

(c) The objective of landfill organic stability plans is achievement of all of the measured goals in subds. 1. to 4. The department may not interpret the goals in subds. 1. to 4. as enforceable environmental quality standards:

1. A monthly average total methane plus carbon dioxide gas production rate less than or equal to 5% of the maximum monthly average total gas production rate observed during the life of the facility, or less than 7.5 cubic feet of total gas per year for each cubic yard of waste in the facility.
2. A steady downward trend in the rate of total methane plus carbon dioxide gas production.
3. Production of total methane plus carbon dioxide gas cumulatively representing 75% or greater of the projected total gas production of the landfilled waste.

4. Reduction of the time necessary to reach landfill organic stability to 40 years or less after site closing.

(d) The landfill owner or operator shall continually evaluate the performance of the implemented landfill organic stability plan, and report progress, results, changes in waste composition and problems to the department no less frequently than annually. The first annual report is due 12 months after the department's approval of the landfill organic stability plan. The department may approve an alternative reporting schedule. Each annual report shall include an evaluation of whether changes are needed in the plan to correct problems or improve results. In addition, the landfill owner or operator may update the contingency plan.

(e) The landfill owner or operator shall examine progress against the approved plan every 5 years to evaluate the likelihood that the plan will enable the facility to reach the goals in par. (c), and determine whether the contingency plan in par. (b)7. will be implemented. A report describing the evaluation and determination shall be submitted to the department as part of the annual report for that year. The department may require that the contingency plan be implemented if its review finds that the progress the landfill has made is significantly different than the approved plan.

(f) If the landfill owner or operator submits the landfill organic stability plan as a modification to an existing plan of operation, the department shall either approve or disapprove the plan modification in writing within 90 days after submission of a complete plan. If the landfill organic stability plan is included by the operator as part of a new plan of operation, the review times in s. NR 514.04(5) shall apply.

SECTION 11. NR 514.10(1)(title) is amended to read:

NR 514.10(1) GENERAL REQUIREMENTS FOR RESEARCH, DEVELOPMENT AND DEMONSTRATION PLANS.

SECTION 12. NR 514.10(1)(b)(intro.) is repealed.

SECTION 13. NR 514.10(1)(a)1. and 2. and NR 514.10(1) (b)1. to 6. are renumbered NR 514.10(1)(a) to (h). NR 514.10(1)(b) and (f) as renumbered are amended to read:

NR 514.10(1)(b) No landfill owner or operator may continue to implement a research, ~~development, development~~ and demonstration plan beyond any time limit placed in the initial plan approval or any renewal without issuance of written approval by the department. Justification for renewals shall be based upon information in annual and final reports as well as research and findings in technical literature.

(f) An annual report shall be prepared for each year of the testing period and a final report shall be prepared for the end of the testing period. These reports shall assess the attainment of goals proposed for the process selected for testing, recommend changes, recommend further work, and summarize problems and their resolution. Reports shall include a summary of all monitoring data, testing data and observations of process or effects and shall include recommendations for continuance or termination of the process selected for testing. Annual reports and final reports shall be submitted to the department within 3 months after the anniversary date of the written approval by the department. ~~Final reports shall be submitted by the end of the testing period.~~

SECTION 14. NR 516.07(2)(c)2. is amended to read:

NR 516.07(2)(c)2. Destructive seam test samples shall be taken at the rate of one sample per 500 feet of fusion seam accomplished, unless another frequency or spacing is approved by the department. For landfills conducting leak location testing in accordance with par. (d), destructive seam test samples shall be taken at a rate of one sample per 1,000 feet of fusion seam accomplished, unless another frequency or spacing is approved by the department. A portion of the sample shall be tested both in the field and in the laboratory for shear and peel with a minimum of 5 samples for each test type. The quality assurance engineer or qualified technician shall choose the location of the destructive seam samples.

SECTION 15. NR 516.08(1) is amended to read:

NR 516.08(1) REQUIREMENTS. Landfills shall meet the requirements of subs. (2) ~~to~~ and (3) where they will accept municipal solid waste and contain leachate collection lines that exceed 1,200 feet from the end of each cleanout to the toe of the opposite slope. Where the requirements of this section differ from other requirements of this chapter, these requirements shall take precedence.

SECTION 16. NR 520.10 is amended to read:

NR 520.10 **Adjustment of financial responsibility.** Proof of the increase in the amount of all bonds, letters of credit, insurance policies, escrow accounts and trust accounts, or other approved methods established under this chapter shall be submitted annually to the department. The owner of a facility identified in Table 1 as being required to establish proof of financial responsibility shall prepare and submit new cost estimates whenever changes to the design or operation of the facility are proposed or otherwise occur which affect the cost of closure, long-term care or remedial actions. The owner of a facility may use information gathered in conjunction with the requirements of s. NR 514.07(9) to propose adjustments which affect the cost of long-term care or remedial actions. In addition, where trust accounts, escrow accounts or deposits with the department have been established to provide financial responsibility, revised proof of financial responsibility calculations shall be performed and submitted to the department any time waste acceptance rates have increased enough to lower the projected remaining operational life of the landfill by one year or more, or when the weighted average annual rate of return of any trust or escrow account has fallen by 1% or more.

SECTION 17. EFFECTIVE DATE. This rule shall take effect on the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22(2) (intro), Stats.

SECTION 18. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on_____.

Dated in Madison, Wisconsin_____

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

By _____
Scott Hassett, Secretary

(SEAL)